

BOTANY.—*Further notes on Hispaniola ferns.*¹ WILLIAM R. MAXON,
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The present paper, which is in continuation of three published recently in this JOURNAL and the Proceedings of the Biological Society of Washington, relates to fern material on loan from the Berlin Botanical Museum and to specimens in the National Herbarium collected by Dr. W. L. Abbott and by E. C. Leonard in the Dominican Republic and Haiti, respectively. It includes descriptions of three new species, all from the Dominican Republic, and notes upon others that are rare or otherwise unknown from Hispaniola.

OPHIOGLOSSACEAE

Botrychium underwoodianum Maxon

Furey, Haiti, *Picarda* 723b; *E. Christ* 1747. Morne la Selle, Haiti, altitude 2,000 meters, *E. Christ* 1851. Near Constanza, Dominican Republic, altitude 2,200 meters, *Türckheim* 3130.

Described from the Blue Mountains of Jamaica, and heretofore reported only doubtfully from Hispaniola. The present specimens, all in the Berlin Museum, are unmistakable, however. As in Jamaica, the period of maturity is August.

Botrychium jenmani Underw.

Valle Nuevo, near Constanza, Dominican Republic, altitude 2,100 meters, *Türckheim* 3130 in part.

New to Hispaniola. Described from the Blue Mountains of Jamaica, but since discovered also in Porto Rico and Cuba.

Botrychium obliquum Muhl.

Valle Nuevo, near Constanza, Dominican Republic, altitude 2,200 meters, *Türckheim* 3130b.

This species of the eastern United States has been known hitherto in the West Indies only from the Blue Mountains of Jamaica, where it is extremely rare on brushy slopes above 1,500 meters elevation.

MARATTIACEAE

Danaea urbani Maxon, sp. nov.

Plants delicate, the rhizome (incomplete) 1 to 1.5 cm. thick. Sterile fronds several, very lax, up to 60 cm. long; stipe as long as the blade, 2 mm. thick, deeply sulcate, with 2 or 3 narrow elongate nodes, dark olivaceous, finely streaked with reddish brown, deciduously brownish-paleaceous, the scales minute, suborbicular, peltate; blades lance-oblong, acuminate, imparipinnate, up to 30 cm. long and 12 cm. broad, obscurely alate, the wings expanded below the nodes; pinnae 10 to 12 pairs (the terminal one nearly conform), mostly inserted 1.5 to 2 cm. apart (the basal pair 3 cm. distant),

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oblique (45° to 50°), 5 to 8 cm. long, 11 to 14 mm. broad, linear or oblong-linear, inequilateral at the cuneate base (50°), long-acuminate or subcaudate in the apical fourth, stalked (2 to 3 mm.), subfalcate, the margins slightly revolute, subentire or repand-dentate in the lower half or two-thirds, beyond that sharply dentate-serrate, the teeth cuspidate; leaf tissue thin-membranous, translucent, sublustrous above, beneath much paler and bearing a few minute punctiform brown scales. Fertile fronds up to 75 cm. long, the stipe shorter than the blade, with 3 or 4 nodes; blades up to 30 cm. long and 7 cm. broad; pinnae about 15 pairs and a terminal one, stalked (2 to 5 mm.) the basal pair 4.5 cm. distant, all oblique, linear, 4 to 6 cm. long, 6 to 8 mm. broad, falcate in the outer part, the tip rather abruptly rounded-apiculate; syngangia 50 to 60 pairs.

Type in the U. S. National Herbarium, no. 698,056, collected in Barahona Province, Dominican Republic, at 700 meters elevation, in moist woods, 1911, by Father Miguel Fuertes (no. 942). The data are partly taken from a sheet of the same collection in the Berlin Botanical Museum.

Distributed as *Danaea wrightii* Underw., a species of Cuba and Porto Rico, which differs in its heavier and strongly scaly stipe and rachis, its larger and thicker sterile pinnae, which are unequally rounded at base and merely acute to acuminate at apex, and its strikingly long-stalked fertile pinnae, these with half the number of syngangia.

Immature specimens from Mount Morales, near Utuado, Porto Rico (Britton & Marble 1072), are referred to *D. urbani*, also; they differ only in having the pinnae slightly broader.

Marattia kaulfussii J. Sm.

Polo, Barahona Province, Dominican Republic, altitude 900 meters or above, Abbott 1830. Near Barahona, Dominican Republic, Fuertes 1432.

Both specimens have previously been referred² erroneously to *M. alata* Swartz, a species known to occur only in the high mountains of Jamaica and Cuba. Aside from the present record *M. kaulfussii* is known definitely only from South America.

POLYPODIACEAE

Hypolepis tenerrima Maxon, sp. nov.

Fronds weakly ascending, apparently up to 2.5 meters long, or more; rhizome slender, wide-creeping, with numerous coarse fibrous roots; stipe about 1 meter long, 4 to 5 mm. thick, distantly muricate, dark cinnamomeous or light castaneous from a brownish castaneous base, lustrous, glabrescent; blades 1.5 meters long or more, up to 1.5 meters broad, subtripinnate; pinnae slightly oblique, triangular-oblong to oblong-ovate, acuminate, up to 80 cm. long and 40 cm. broad, stalked (3 to 5 cm.), the secondary rachis cinnamomeous to light castaneous, glabrescent, distantly muricate or not; secondary pinnae distant, spreading (90°), lax, the basal ones a little reduced, the next 2 or 3 pairs the largest, narrowly oblong-lanceolate, long-attenuate, 16 to 20 cm. long, 5 to 7 cm. broad, the rachis stramineous to pale castaneous, lustrous, minutely puberulous; pinnules distant, spreading (90°), oblong or narrowly oblong, obtuse, those of the proximal side usually largest, 2.5 to 4 cm. long, 10 to 14 mm. broad, all but the smallest ones nearly pinnate,

² Proc. Biol. Soc. Washington 37: 98. 1924.

the segments joined by a narrow foliaceous wing; segments 7 to 11 pairs, slightly oblique, somewhat apart, oblong, rounded-obtuse, crenately lobed half-way to the middle (the lobes 2 or 3 pairs below the crenulate-dentate tip), scantily puberulous beneath, nearly glabrous above; veins delicate, mostly twice-forked within the lobes, the first anterior branch fertile, extending nearly to the deep sinus between the lobes; sori small, few-sporangiate (the receptacle small, elongate, slightly elevated), submarginal, subtended by a minute yellowish green, delicately membrano-herbaceous, indusiiform lobule, this concave or reflexed, glabrous, seated at the extreme sinus. Leaf tissue very delicately herbaceous, fragile, dull dark green on both surfaces.

Type in the U. S. National Herbarium, nos. 1,146,596-597, representing a complete pinna, collected in the vicinity of Paradis, Barahona Province, Dominican Republic, altitude 450 meters, January 30, 1922, by W. L. Abbott (no. 1619). Represented also by specimens collected at the same locality by Abbott (no. 1563) and by Fuertes (no. 1015), the latter determined by Brause as *H. hostilis* (Kunze) Presl.

The present species is almost certainly distinct from all described members of the genus, and, although only minutely indusiate, is perhaps nearest related to certain Brazilian plants that are still referred erroneously to *H. repens* (L.) Presl. Its most outstanding peculiarities are its extreme delicacy and the extraordinary fragility of its leaf tissue.

Hypolepis urbani Brause.

Loma Rosilla, La Vega Province, Dominican Republic, altitude 2,700 meters, July, 1912, *Fuertes* 1791b.

A study of the type material (2 sheets), lent from the Berlin Museum, necessitates some modification of the original description and a comparison with other species. Thus, the small lobules opposite the sori are not "unchanged," as stated, but are very definitely modified to thin, transversely linear-oblong, yellowish indusia of delicate texture, with fragile crose-dentate borders. *H. urbani* can not, therefore, be regarded as closely allied to *H. poeppigiana* Mett. It is much more closely allied to *H. bogotensis* Karst., which it suggests also in general aspect but from which it departs widely in its less ample indusia, thinner texture, and dense covering of minute pellucid hairs beneath. In the last respect it shows equal relationship to *H. viscosa* Karst.; but that species has a much coarser covering of distinctly glandular hairs, and indusia copiously fringed with long septate hairs.

Pteris hispaniolica Maxon, sp. nov.

Rhizome and stipe wanting; blade ternate; terminal branch wanting, presumably bipinnate; lateral branches bipartite, petiolate, the main division ovate, 55 cm. long, 25 cm. broad, the inferior division broadly ovate, 30 cm. long, 18 cm. broad, both fully bipinnate, abruptly long-acuminate, caudate, the rachises dull castaneous beneath, scabrous, scantily paleaceous, the scales dark brown, linear-attenuate, 2 to 3 mm. long, closely appressed, mostly caducous; pinnules oblique (45°), contiguous, sessile, narrowly triangular-lanceolate, long-attenuate, 10 to 18 cm. long, 2.5 to 4 cm. broad at base, the rachis greenish-stramineous, scantily, laxly, and minutely brownish-paleaceous beneath and beset with numerous pale spines, these spreading or retrorse, mostly curved, nearly cylindrical, 0.4 to 0.6 mm. long; segments

distant (nearly or quite their own width apart), oblique, mostly simple (the basal ones sometimes enlarged and pinnatisect), linear, semiadnate, decurrent, lightly falcate, up to 2.5 cm. long, 3 to 4 mm. broad, acutish at apex, the tip whitish-cartilaginous, mucronate; margins of sterile segments rigidly recurved, cartilaginous, rigidly incurved-serrate toward the tip, the firm whitish border joining the enlarged whitish arcuate vein-ends throughout; costae prominent, sulcate, and glabrous above, very strongly rounded and elevated beneath, sparingly septate-fibrillose at base and bearing a few blunt spines; veins 10 to 13 pairs, oblique, mostly once forked near the costa, evident above, beneath thick, whitish, broad, slightly elevated, glabrous; leaf tissue very rigidly herbaceo-coriaceous, grayish green and sublustrous above, paler beneath; indusia ample, about 0.8 mm. broad, not reaching the tip, abruptly discontinuous, firm, whitish, brownish with age.

Type in the Berlin Botanical Museum, collected on Morne de la Hotte, Département du Sud, Haiti, at 1,400 meters altitude, August 7, 1917, by E. L. Ekman (no. 525). A second specimen from Haiti (Mission, altitude 1,200 meters, *Leonard* 3900) represents what may be an atypical juvenile form of the same species; in this the segments are mostly sessile or even short-stalked, but in minute characters it is identical.

The relationship of *P. hispaniolica* is with *P. coriacea* Desv., as which it was determined by Brause. From that species it differs notably, however, in its gray-green (not strongly yellow-green) color, and its oblique, linear, distant, semiadnate segments, the segments of *P. coriacea* being relatively much broader, close together, and wholly adnate. The rachises of the pinnules are strongly flexuose in *P. coriacea*, but not at all so in *P. hispaniolica*.

***Polypodium jenmani* Underw.**

Morne de la Hotte, Haiti, altitude 800 meters, *Ekman* 153.

New to Hispaniola, having been known heretofore only from Jamaica and Cuba.³

***Polypodium arcuatum* Moritz.**

Loma Rosilla, La Vega Province, Dominican Republic, altitude 1,300 meters, in wet forest, *Fuertes* 1781.

The specimens, so determined by Brause, afford an interesting extension of range for this species, which has been known only from South America. It may now be reported from Jamaica, also, on the basis of the following specimens, all from the vicinity of Vinegar Hill, altitude 1,200 meters: *Hart* 169; *Underwood* 2597; *Maxon* 1524, 2778, 2786.

***Polypodium plesiosorum* Kunze.**

Las Lagunas, Azua Province, Dominican Republic, altitude 1,000 meters, *Fuertes* 1854.

Apparently new to the West Indies; agreeing fairly well with some of the Mexican and Central American material referred to this species.

***Polypodium surucuchense* Hook.**

Loma Rosilla, La Vega Province, Dominican Republic, altitude 1,300 meters, *Fuertes* 1770. Near Constanza, Dominican Republic, altitude 1,300 meters, *Türckheim* 3220.

³ Journ. Wash. Acad. Sci. 12: 440. 1922.

This species in one form or another occurs on the continent from Guatemala to the Andes of Ecuador. In the West Indies it has been known previously from Jamaica, Martinique, and Guadeloupe.

Oleandra guatemalensis Maxon.

Morne de la Hotte, Haiti, altitude 1,400 meters, on decayed tree trunks, *Ekman* 547.

The specimen at hand, lent from the Berlin Museum, is the type of *O. urbani* Brause. It is in no way distinguishable from *O. guatemalensis*, known otherwise only from Guatemala.

Dryopteris linkiana (Presl) Maxon.

Gymnogramma diplazioides Desv. Mém. Soc. Linn. Paris 6: 214. 1827.

Dryopteris diplazioides Urban, Symb. Ant. 4: 21. 1903, not Kuntze, 1891.

Gymnogramma polypodioides Link, Hort. Berol. 2: 50. 1833, not Spreng. 1827.

Grammitis linkiana Presl, Tent. Pter. 209. 1836.

Nephrodium linkianum Diels in Engl. & Prantl, Pflanzenfam. 1⁴: 172. 1899.

Mission, Fond Varettes, Haiti, in thickets on mountain slopes; occasional, *Leonard* 4001.

This species was described originally from Haiti, but seems to have been known otherwise from Hispaniola only upon the basis of a specimen in the Copenhagen Herbarium, collected by Thouin. The present specimen has a slender erect rhizome more than 15 cm. long and leaves 145 cm. long; the blade has 6 or 7 pairs of greatly reduced basal pinnae, the lowermost merely vestigial.

Under the American Code the name *Dryopteris diplazioides* (Desv.) Urban, 1903, is not available for this species, the same combination having been proposed by Kuntze in 1891 for the very different plant of Venezuela described in 1858 as *Aspidium diplazioides* Moritz. Only the essential synonymy is given above.

SELAGINELLACEAE

Selaginella lasiophylla A. Br.

Summit of Loma Atravezada, at base of Punta Cabrón, Samaná Peninsula, Dominican Republic, altitude 600 meters, *Abbott* 2941.

Apparently new to Hispaniola. The identification is by comparison with a specimen from Troy, in the "Cockpit" region of western Jamaica (*Maxon* 2845), so determined long ago by Hieronymus. The species is unusual in its delicately scabrid-setulose leaves.

Selaginella longispicata Underw.

Mao, Santiago Province, Dominican Republic, altitude 100 to 300 meters, *Abbott* 1035.

A remarkable extension of range for this species, which has been known hitherto only from Yucatán. The specimens offer no special points of distinction from Yucatán material, of which the following specimens are at hand: *Gaumer* 825 (3 sheets); *Valdez* 50; *Schott* 669.